Kinematic Navigation and Cartography Knapsack (KNaCK)

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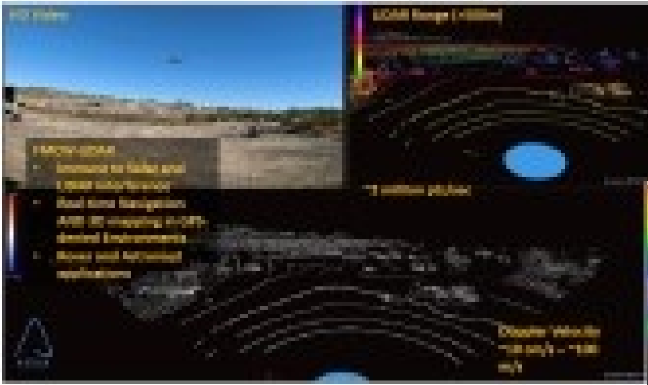
- FMCW-LiDAR 3D terrain mapping and navigation proof-of-concept
- Simultaneous velocity+range and SLAM algorithm development tool
- Environmental testing prototype: TVAC chamber ~Jan. 2023

[illegible]

No-light personal navigation tool

[illegible]

GPS
Inertial LiDAR
Heads-up display
Aeva
Battery / Processing

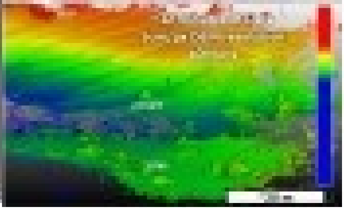


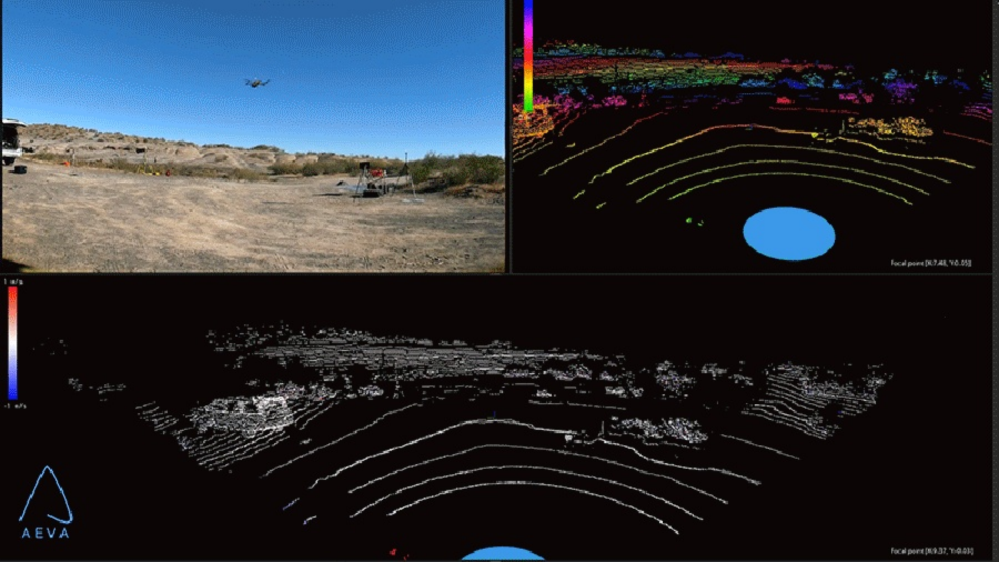
HD Video
LiDAR Range (>300m)
~1 million pts/sec

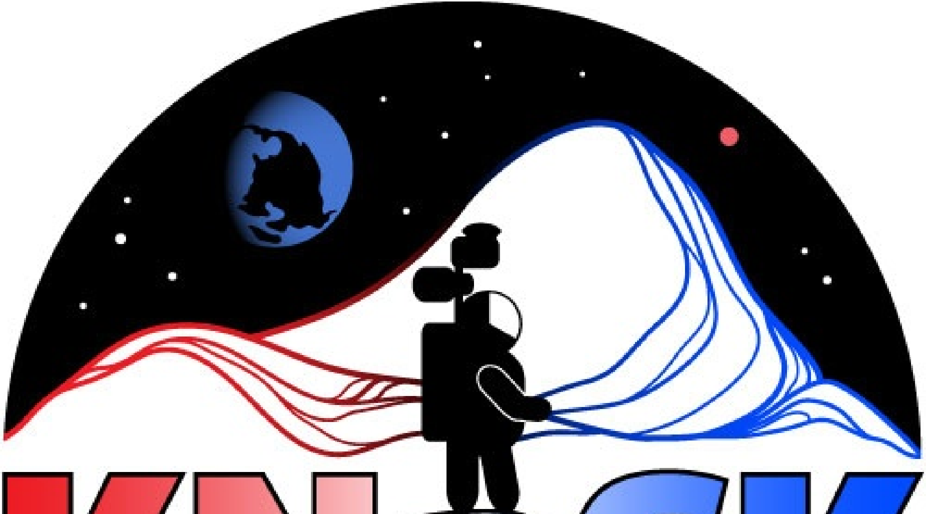
FMCW-LiDAR

- Immune to Solar and LiDAR interference
- Real-time Navigation AND 3D mapping in GPS-denied Environments
- Rover and Astronaut applications

Doppler Velocity ~10 cm/s – ~100 m/s




Focal point [X:7.48, Y:0.05]
1 m/s
-1 m/s
AEVA
Focal point [X:9.37, Y:0.03]



KNaCK

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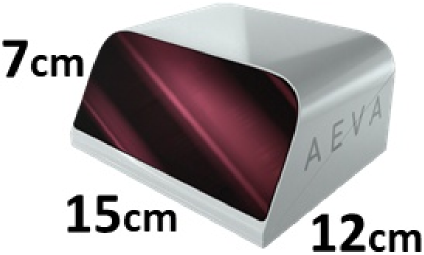
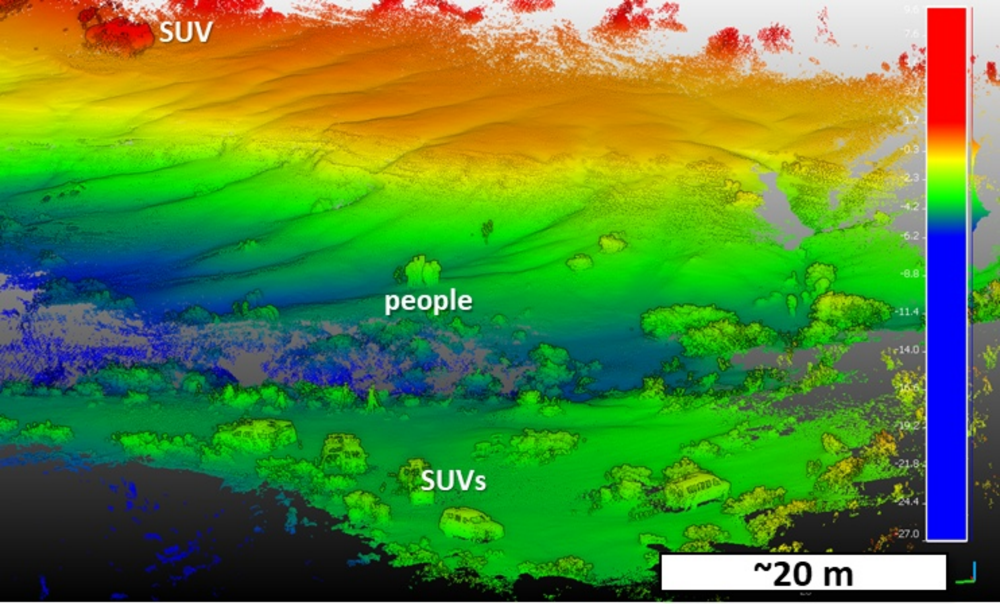

7cm
AEVA
15cm
12cm

Aeva, Inc Aeries 2 FMCW-LiDAR: automotive grade COTS sensor for autonomous vehicle navigation for TRL advancement


SUV
people
SUVs
9.6
7.6
3.7
1.7
-0.3
-2.3
-4.2
-6.2
-8.8
-11.4
-14.0
-16.6
-19.2
-21.8
-24.4
-27.0
~20 m

NASA

MARSHALL
SPACE FLIGHT CENTER